

**UNITED STATES INTERNATIONAL TRADE COMMISSION**  
**Washington, D.C.**

In the Matter of

**CERTAIN NON-VOLATILE MEMORY  
DEVICES AND PRODUCTS  
CONTAINING THE SAME**

**Investigation No. 337-TA-1046**

**COMMISSION OPINION**

This investigation is before the Commission for a final determination on the issues under review, as well as issues concerning remedy, the public interest, and bonding. The Commission has determined to affirm the presiding administrative law judge's ("ALJ") initial determination ("ID") that Respondents, Toshiba Corporation of Tokyo, Japan; Toshiba America, Inc. of New York, New York; Toshiba America Electronic Components, Inc. of Irvine, California; Toshiba America Information Systems, Inc. of Irvine, California; and Toshiba Information Equipment (Philippines), Inc. of Binan, Philippines (collectively, "Toshiba") have not violated section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), in connection with claims 1-8 of U.S. Patent No. 6,552,360 ("the '360 patent"); claims 1-5 and 7-10 of U.S. Patent No. 6,788,602 ("the '602 patent"); and claims 11-16 of U.S. Patent No. 8,035,417 ("the '417 patent"). The Commission has, however, determined to reverse the ID's finding of no violation of section 337 in connection with claim 6 of the '602 patent.

Specifically, the Commission has determined to (1) reverse the ID's finding that the accused products do not directly infringe the asserted claims of the '602 patent; (2) affirm the ID's indirect infringement and invalidity findings as to the '602 patent; and (3) reverse the ID's finding that Macronix failed to establish a domestic industry in the process of being established.

Having found a violation of section 337, the Commission has determined that the

appropriate remedy is a limited exclusion order and cease and desist orders. The limited exclusion order prohibits entry of the respondents' infringing non-volatile memory devices and products containing the same for consumption in the United States. The cease and desist orders prohibit, among other things, the importation, sale, and distribution of infringing products by domestic respondents. The Commission finds that the public interest factors set out in sections 337(d) and (f) do not preclude issuance of the remedial orders. The Commission has determined to set a bond in the amount of 100 percent of entered value for Toshiba flash memory devices, solid-state drives ("SSDs"), USB Flash Drives, and microcontroller units ("MCUs"), and set a bond in the amount of six percent of entered value for Toshiba personal computers, multi-function printers ("MFPs"), and air conditioners imported during the period of Presidential review.

## **I. BACKGROUND**

### **A. Procedural History**

The Commission instituted Inv. No. 337-TA-1046 on April 12, 2017, based on a complaint filed by Macronix International Co., Ltd. of Hsin-chu, Taiwan and Macronix America, Inc. of Milpitas, California (collectively, "Macronix"). 82 *Fed. Reg.* 17687-88 (Apr. 12, 2017). The complaint alleges violations of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain non-volatile memory devices and products containing the same that infringe one or more of claims 1-8 of the '360 patent; claims 1-12 and 16 of the '602 patent; and claims 1-7, 11-16, and 18 of the '417 patent. The Notice of Investigation names the Toshiba entities listed above as respondents. The Office of Unfair Import Investigations is a party to the investigation.

On June 16, 2017, the Commission determined not to review the ALJ's order (Order No. 11) granting an unopposed motion to amend the Notice of Investigation to add Toshiba Memory Corporation of Tokyo, Japan as a respondent. *See* Order No. 11, Comm'n Notice of Non-Review (June 16, 2017).

On October 17, 2017, the Commission determined not to review the ALJ's order (Order No. 20) granting an unopposed motion to terminate the investigation as to claims 11, 12, and 16 of the '602 patent. *See* Order No. 20, Comm'n Notice of Non-Review (Oct. 17, 2017).

On October 4, 2017, the ALJ held a *Markman* hearing to construe certain disputed claim terms. On December 5, 2017, the ALJ issued Order No. 23 (*Markman* Order), setting forth her construction of the disputed claim terms.

On January 18, 2018, the Commission determined not to review the ALJ's order (Order No. 24) granting an unopposed motion to terminate the investigation as to claims 1-7 and 18 of the '417 patent. Order No. 24; Comm'n Notice of Non-Review (Jan. 18, 2018).

The ALJ held an evidentiary hearing from February 8, 2018 through February 14, 2018, and thereafter received post-hearing briefs.

On April 27, 2018, the ALJ issued her final ID, finding no violation of section 337 by Toshiba in connection with the pending claims, *i.e.*, claims 1-8 of the '360 patent; claims 1-10 of the '602 patent; and claims 11-16 of the '417 patent. Specifically, the ALJ found that the Commission has subject matter jurisdiction, *in rem* jurisdiction over the accused products, and *in personam* jurisdiction over Toshiba. ID at 15-17. The ALJ also found that Macronix satisfied the importation requirement of section 337 (19 U.S.C. § 1337(a)(1)(B)). *Id.* The ALJ, however, found that the accused products do not infringe the asserted claims of the '360 patent and '417 patent. *See* ID at 19-65, 118-130. The ALJ also found that Toshiba failed to establish that the

asserted claims of the '417 patent are invalid for obviousness. ID at 132-141. Toshiba did not challenge the validity of the '360 patent. ID at 70. With respect to the '602 patent, the ALJ found that Macronix proved that Toshiba induces infringement of asserted claims 1-10, but that claims 1-5 and 7-10 are invalid for obviousness. ID at 71-88, 91-117. Notably, the ALJ did not find claim 6 invalid for obviousness. Finally, the ALJ found that Macronix failed to establish the existence of a domestic industry that practices the asserted patents under 19 U.S.C. § 1337(a)(2) and also failed to show a domestic industry in the process of being established. *See* ID at 142-153, 154-186. Specifically, the ALJ found that Macronix failed to establish the economic prong of the domestic industry requirement for all asserted patents. She also found that Macronix failed to establish the technical prong for the '360 patent, but established the technical prong for the '602 and '417 patents. *See id.*

On May 10, 2018, the ALJ issued her recommended determination on remedy and bonding. Recommended Determination on Remedy and Bonding ("RD"). The ALJ recommends that in the event the Commission finds a violation of section 337, the Commission should issue a limited exclusion order prohibiting the importation of Toshiba's accused products that infringe the asserted claims of the asserted patents. RD at 1-5. The ALJ also recommends issuance of cease and desist orders against the domestic Toshiba respondents based on the presence of commercially significant inventory in the United States. RD at 5. The ALJ further recommends that the Commission set a bond in the amount of 100 percent of entered value for Toshiba flash memory devices and SSDs, and a bond in the amount of [[            ]] of entered value for Toshiba PCs imported during the period of Presidential review. RD at 6-9.

On May 14, 2018, Macronix filed a petition for review challenging the ID's finding of no

violation of section 337.<sup>1</sup> The Commission investigative attorney (“IA” or “Staff”) also filed a petition for review that same day, challenging the ID’s finding that Macronix failed to demonstrate a domestic industry in the process of being established and certain findings as to the ’602 patent.<sup>2</sup> Also on May 14, 2018, Toshiba filed a contingent petition for review of the ID, offering alternative grounds for affirming the ID “in the event that the Commission decides to review the ID.”<sup>3, 4</sup>

On May 22, 2018, Macronix and Toshiba filed their respective responses to the petitions for review.<sup>5</sup> On May 23, 2018, the IA filed a response to the private parties’ petitions for review.<sup>6</sup>

On June 28, 2018, the Commission determined to review the final ID in part and requested the parties to brief certain issues. *See* 83 *Fed. Reg.* 31416-18 (July 5, 2018). The Commission determined to review the following issues in the final ID: (1) the finding that Macronix failed to satisfy the domestic industry requirement; and (2) the findings of infringement

---

<sup>1</sup> *See* Complainants Macronix International Co., Ltd and Macronix America, Inc.’s Petition for Review of the Initial Determination (“Macronix Pet.”).

<sup>2</sup> *See* Petition of the Office of Unfair Import investigations for Review-in-Part of the Initial Determination on Violation of Section 337 (“IA Pet.”).

<sup>3</sup> *See* Respondents’ Contingent Petition for Review of the Initial Determination on Violation of Section 337 (“Toshiba Pet.”)

<sup>4</sup> Under the Commission’s rules, contingent petitions for review are treated as petitions for review. 19 C.F.R. § 210.43(b)(3).

<sup>5</sup> *See* Response of Complainants Macronix International Co., Ltd and Macronix America Inc. to the Toshiba Respondents’ and the Investigative Attorney’s Respective Petitions for Review of the Initial Determination (Macronix Resp.); Respondents’ Combined Response to Complainants’ and Staff’s Petitions for Review of the Initial Determination (“Toshiba Resp.”).

<sup>6</sup> *See* Response of the Office of Unfair Import Investigations to the Private Parties’ Petitions for Review of the Initial Determination on Violation of Section 337 (“IA Resp.”). We note that the Chairman granted the IA’s motion for leave to file the response a day late.

and invalidity as to the '602 patent. *Id.* In its notice of review, the Commission posed the following questions as to the issues under review:

1. Would one of ordinary skill in the art understand that the claim term “coupled” in the asserted claims of the '602 patent construed to mean “conductively connected” requires select transistors? If yes, how does it affect the ID’s infringement, domestic industry technical prong, and invalidity findings?
2. Would one of ordinary skill in the art understand that the claim term “memory array” in the asserted claims of the '602 patent construed to mean “multiple memory cells coupled to a grid of word lines and bit lines” necessarily includes select transistors? If yes, how does it affect the ID’s infringement, domestic industry technical prong, and invalidity findings?
3. The ID states that under the adopted construction of “memory array” (set forth above), “a memory array consistent with the '602 patent . . . could span an entire plane or only a subset of memory cells in a plane.” ID at 80. Is this additional language consistent with the ID’s construction? If that additional language is omitted, how will the ID’s infringement, domestic industry technical prong, and invalidity findings be affected?
4. Please discuss the showing necessary to meet the statutory requirement of “articles protected by the patent” for a domestic industry in the process of being established under section 337(a)(2).

The Commission further posed the following questions with respect to the public interest:

1. If an exclusion order issues against Toshiba’s accused products, can Dell’s other SSD suppliers or other SSD suppliers in general fill any void that may be created?
2. What domestic Dell products will be impacted by an exclusion order?
3. Toshiba and Dell request a delay in implementing any exclusion order. If an exclusion order issues, what specific product(s) should a delay apply to? What should be the duration of the delay?
4. Macronix and Toshiba present vastly different views about the ability of suppliers to satisfy domestic demand if an exclusion order issues. Please discuss the ability of suppliers other than Toshiba to satisfy domestic demand for each and every product that may be affected by an exclusion order.

On July 12, 2018, the parties filed submissions regarding the Commission's questions and also briefed the issues of remedy, the public interest and bonding.<sup>7</sup> On July 19, 2018, the parties filed responses to the initial submissions.<sup>8</sup>

**B. Patents and Technology at Issue**

The technology at issue in this investigation relates generally to the structure and operation of non-volatile memory devices. ID at 3.

The '602 patent entitled "Memory Device and Operation Thereof" issued on September 7, 2004. The patent describes a system and method to prevent dummy cells from over-erasing in a memory device. '602 patent, col.1 ll.7-9. In conventional memory devices, memory cells are arranged in an array of word and bit lines. *Id.* at col.1 ll.13-17. The word lines and bit lines at the edge of the device are often unusable because they are etched partially or completely, and the unused word line at the edge is referred to as a "dummy" word line. *Id.* at col.1 ll.17-28. Conventionally, these dummy word lines are coupled to ground, and this leads to over-erasure of the dummy cells over time. *Id.* at col.1 ll.29-36. The '602 patent solves this problem by coupling the dummy word line to a positive bias during an erase operation. *Id.* at Abstract.

---

<sup>7</sup> See Submission of Complainants Macronix International Co., Ltd. and Macronix America, Inc. in Response to the Commission's Notice of Partial Review ("Macronix Sub."); Respondents' Opening Brief to Commission on the Issues Under Review and on Remedy, the Public Interest and Bonding ("Resp. Sub."); Response of the Office of Unfair Import Investigations to the Commission's Request for Written Submissions on the Issues Under Review and on Remedy, the Public Interest, and Bonding ("IA Sub."); Statement of Third Parties Dell Technologies Inc. and Dell Inc. in Response to Notice of Commission Determination to Review in Part a Final Initial Determination Finding No Violation of Section 337 (July 12, 2018) ("Dell Sub.")

<sup>8</sup> See Combined Reply of the Macronix Complainants to the Respective Submissions of the Toshiba Respondents, the Office of Unfair Import Investigations, and Dell in Response to the Commission's Notice of Partial Review ("Macronix Rep."); Respondents' Reply Brief to Commission on the Issues Under Review and on Remedy, the Public Interest and Bonding ("Resp. Rep."); Response of the Office of Unfair Import Investigations to Written Submissions on the Issues Under Review and on Remedy, the Public Interest, and Bonding ("IA Rep.").

Independent claims 1 and 7 and dependent claims 2-6 (depending from claim 1) and 8-10 (depending from claim 7) are at issue in this investigation. Claims 1 and 7 recite:

1. A semiconductor memory device, comprising:  
  
a memory cell;  
  
a dummy word line arranged at an edge of a **memory array** coupled to the memory cell;  
  
a control logic for supplying a positive bias to the dummy word line during an erase operation; and  
  
at least one bit line **coupled to** the memory cell.

'602 patent, col.5 l.59-col.6 l.3.

7. A semiconductor memory array, comprising:  
  
a memory cell;  
  
at least one bit line arranged in a first direction and coupled to the memory cell; and  
  
at least one dummy word line arranged at an edge of a **memory array** arranged in a second direction perpendicular to the at least one bit line and **coupled to** the memory cell,  
  
wherein a positive bias is selectively supplied to the at least one dummy word line at least during erase operation.

*Id.* at col.6 ll.21-31.

The '417 patent entitled "Output Buffer Circuit with Variable Drive Strength" issued on October 11, 2011. The patent describes an arrangement of multiple output buffer circuits that "have a variable combined output drive strength, depending on a set of buffer enable signals." '417 patent, Abstract. According to the specification, conventional output buffer circuits in the prior art would either be on or off, resulting in a "one size fits all" design for output drive strength. *Id.* at col.1 ll.9-10. The disclosed arrangement provides an improvement



over conventional output buffer circuits. Independent claim 11 with its dependent claims 12-16 are at issue in this investigation. Claim 11 recites:

11. An apparatus, comprising:

a plurality of output buffer circuits coupled in parallel to provide a combined output drive strength, each output buffer circuit of the plurality of output buffer circuits including a buffer data output providing a data output signal having a drive strength,

wherein the data output signal is combined across the plurality of output buffer circuits to provide a combined data output signal having the combined output drive strength, and the combined output drive strength is tuned by buffer enable signals customized across the plurality of output buffer circuits,

wherein the buffer enable signals are received together with complements of the buffer enable signals, and the buffer enable signals and the complements of the buffer enable signals control pairs of transistors having opposite conductivity types.

'417 patent, col.11 l.54-col.12 l.3.

The '360 patent entitled "Method and Circuit Layout for Reducing Post Chemical Mechanical Polishing Defect Count" issued on April 22, 2003. The patent describes a method and a circuit layout on a substrate of a semiconductor wafer, suitable for reducing defects during a chemical mechanical polishing process. '360 patent, Abstract.

Chemical Mechanical Polishing ("CMP") is used in semiconductor fabrication to planarize dielectric and metal layers of a semiconductor wafer. '360 patent, col.1 ll.13-17. CMP uses mechanical pressure in combination with a chemical reaction to level the surface of the wafer. *Id.* at col.1 ll.31-34. During the CMP process, a polishing head presses the wafer against a polishing pad and drives the wafer to rotate in one direction while the polishing pad rotates in the opposite direction. *Id.* at col.1 ll.35-38. While the wafer is pressed against the polishing pad, polishing slurry is injected between the wafer and the polishing pad. *Id.* at col.1 ll.38-40. The

polishing slurry chemically reacts with the wafer's surface and aids in planarizing the wafer. *Id.* at col.1 ll.31-34, ll.41-45; *see* ID at 3-6. Independent claim 1 with its dependent claims 2-8 are at issue in this investigation. Claim 1 recites:

1. A circuit layout on a substrate of a semiconductor wafer, suitable for reducing defects during a chemical mechanical polishing process, said substrate comprising a plurality of strips of first circuit structure, said circuit layout comprising:

at least two strips of second circuit structure located on said substrate of said semiconductor wafer, each of said two strips of second circuit structure respectively linking the front end and the rear end of said plurality of strips of said first circuit structure, utilizing to average polishing pressure performed upon the front end and the rear end of said plurality of strips of said first circuit structure during said chemical mechanical polishing process for reducing defects occurred [sic].

'360 patent, col.6 ll.2-14.

### **C. Products at Issue**

The products at issue are non-volatile memory devices, which are also known as flash memory devices. ID at 12-13. Specifically, the accused products include NAND flash memory, solid state drives (SSDs) containing such NAND flash memory, and certain downstream products containing those SSDs, including personal computers, USB flash drives, microcontroller units, multi-function printers, and air conditioners. *See* CX-0002C at TT 6-8. The parties stipulated that [[ ]] are representative of all of the accused products in this investigation. *Id.*; CX-0003C at 4-6, Appendix A.

## **II. ISSUES UNDER REVIEW**

### **A. Whether the Accused Products Infringe the Asserted Claims of the '602 Patent**

Macronix and the IA petitioned for review of the ID's finding that the accused Toshiba products do not satisfy the "coupled to" limitation. *See* Macronix Pet. at 39; IA Pet. at 7.

Infringement determination is a two-step process. First a tribunal determines the scope and meaning of disputed claim terms as a matter of law. Second, the properly construed claims are compared to the accused products to determine infringement. *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 261 F.3d 1329, 1336 (Fed. Cir. 2001).

**1. Whether the Accused Toshiba Products Satisfy the Claim Limitation:  
“A Dummy Word Line Arranged at an Edge of a Memory Array  
Coupled to the Memory Cell”**

**i. The ID**

The ID finds that “a ‘memory array’ in the context of the ’602 patent shall be construed to mean multiple memory cells coupled to a grid of word lines and bit lines” and that “[u]nder this construction, a memory array consistent with the ’602 patent does not have to include or exclude select transistors, and it could span an entire plane or only a subset of memory cells in a plane.” ID at 80. The ID rejects Macronix’s proposal to construe the claim limitation to “exclude non-memory components, such as the select transistors in the accused products.” *Id.* at 77. Macronix’s expert, Dr. Liu, testified that “a memory array in the context of the ’602 patent ‘is a group of memory cells that are coupled to bit lines and word lines and are demarcated by non-memory elements, such as select gate transistors.’” *Id.* (citing CX-3840C at Q/A 346-49). The ID finds that although the evidence cited by Dr. Liu “shows that the term ‘memory array’ is used to describe memory cells arranged in a grid, nothing cited by Dr. Liu supports the adoption of a negative limitation excluding non-memory elements.” *Id.*

The ID also rejects Macronix’s alternative argument for excluding the select gate transistors. *Id.* Macronix argued that “a memory array must be a continuous grid of memory cells, without other intervening components.” *Id.* The ID states that “[t]here is no support, intrinsic or extrinsic, however, for importing a ‘continuous’ limitation into the claim” and that

“[t]he language in the claims and specification of the ’602 patent do not impose such limitations on the memory array.” *Id.* Instead, the ID finds that “[t]he relevant specification language is not restrictive, stating that the memory array ‘generally includes the memory cells coupled to a grid of word lines and bit lines.’” *Id.* (citing ’602 patent, col. 1:15-17).

The ID finds that the accused Toshiba products satisfy this limitation. The ID states that “[t]he memory array identified by Dr. Liu includes [[

]]” and that “Dr. Liu’s analysis is consistent with the claim construction discussed above, which allows for a subset of memory cells in a block or plane to form a memory array.” *Id.* at 80 (citing CX-3840C at Q/A 343-44). The ID finds that “Toshiba’s and Staff’s non-infringement arguments rely on more restrictive constructions which . . . are not supported by the intrinsic and extrinsic evidence.” *Id.*

## **ii. Commission Review**

The ID construes “memory array” to mean “multiple memory cells coupled to a grid of word lines and bit lines.” ID at 80. No one challenges this construction. The ID, however, adds that “[u]nder this construction, a memory array consistent with the ’602 patent does not have to include or exclude select transistors, and it could span an entire plane or only a subset of memory cells in a plane.” *Id.* The IA and Toshiba petitioned for review, arguing that this additional language is in error. The Commission determined to review and, as noted above, asked the parties to brief certain issues related to the issue

### **a. Whether the “Memory Array” Claim Limitation Requires Select Transistors**

#### **i. Complainants’ Submission**

Macronix argues that the term “coupled,” construed to mean “conductively connected,” “does not require select transistors, which are a feature of particular memory architectures such

as NAND flash memory.” Macronix Sub. at 1. According to Macronix, all the experts agree that “the ’602 patent is not limited to any particular memory architecture, as it covers memory architectures that do not even use select transistors, such as NOR flash memory.” *Id.* (citing Tr. (Liu) at 272:13-274:4; Tr. (Rhyne) 1074:13-25; Tr. (Baker) at 892:19-21). Specifically, Macronix explains that “[b]ecause the ’602 patent’s invention broadly applies to many different kinds of memory architectures, the parties’ experts unanimously agreed that its claims are not limited to any particular memory architecture. *Id.* (citing JX-0002 at 3:60-65; Tr. (Liu) at 272:13-274:4; Tr. (Rhyne) 1074:13-25; Tr. (Baker) at 892:19-21). Macronix contends that “the ’602 patent is explicit on this point, stating that its memory cells could include floating-gate cells—as used in NOR and NAND—as well as SONOS nonvolatile cells, among other types of memory.” *Id.* at 2 (citing JX-0002 at 3:60-65; Tr. (Liu) at 272:13-274:4. Macronix adds that “Toshiba’s own expert, Dr. Rhyne, was also very clear in his testimony on this point, explaining that the ’602 patent ‘doesn’t care what kind of memory it is’ because it ‘doesn’t specifically limit itself’ to any particular memory architectures like NAND or NOR” and that “Toshiba’s other expert, Dr. Baker, likewise admitted that the ’602 patent is not limited to NOR flash memory or its architecture.” *Id.* (citing Tr. (Rhyne) 1074:13-25). Tr. (Baker) at 892:19-21. Macronix argues that because “select transistors are included in some, but not all, of these types of memory, a person skilled in the art understands that the ’602 patent’s claims, including the term ‘coupled,’ neither precludes nor requires the use of select transistors.” *Id.* (citing Tr. (Liu) at 272:13-274:4 (explaining that select transistors are more common in NAND flash, but that the ’602 patent also covers other types of memory).] Tr. (Rhyne) at 1074:13-25 (the ’602 patent “does not show a select gate [transistor] because . . . it doesn’t care what kind of memory it is.”)

Macronix further contends that the experts also agree that “a bit line ‘conductively

connected’ to a memory cell simply requires that there can be an electrical path from the bit line to the memory cell, without mandating select transistors” but that “[e]ven if select transistors were (erroneously) required, it would provide no basis to disturb the [ID’s] infringement finding because Toshiba’s products undisputedly [[ ]].” *Id.* (citing ID at 72-73; RX-1245C at Q/A71; CX-3840C at Q/A350-Q/A351; Tr. (Baker) at 773:18-774:18; CX-3840C at Q/A378-Q/A380).

## **ii. Respondents’ Submission**

Toshiba states that an ordinarily skilled artisan “would not understand the claim term ‘coupled’ in the asserted claims of the ’602 patent, construed to mean ‘conductively connected,’ to by itself always require select transistors to practice the asserted claims in any potentially accused product or any alleged prior art.” Toshiba Sub. at 1. Yet, Toshiba contends that because its accused NAND products are [[

]] and thus “prevents the ‘coupled’ claim limitation from being practiced in the accused products at the time of importation.” *Id.* (citing ID at 81; RX-1245C at Q65, Q156-Q157, Q161, Q163, Q166.)

Toshiba, however, argues that “[o]ne of ordinary skill in the art understands that the claim term ‘memory array’ in the asserted claims of the ’602 patent, construed to mean ‘multiple memory cells coupled to a grid of word lines and bit lines,’ necessarily includes select transistors in a NAND flash memory device, and does not include select transistors in a NOR flash memory device.” *Id.* at 2. Toshiba explains that in a NAND flash memory device, “the construction of ‘memory array’ expressly includes the ‘grid of word lines and bit lines’” and that “[t]his grid always includes the select transistors in a NAND memory array.” *Id.*

### **iii. IA's Submission**

The IA states that “in the context of the parties’ dispute in this investigation, one of ordinary skill in the art of the ‘602 patent would understand that the claim term ‘coupled’ in the asserted claims of the ‘602 patent construed to mean ‘conductively connected’ requires select transistors.” IA Sub. at 6-7. According to the IA, “the evidence shows that both Macronix’s technical expert (Dr. David Liu) and Toshiba’s technical experts (Dr. Jacob Baker and Dr. Thomas Rhyne) are persons of ordinary skill in the art who understand that the claim term ‘coupled,’ recited in the claim phrase ‘bit line . . . coupled to the memory cell’ and construed to mean ‘conductively connected,’ requires select transistors.” *Id.* at 7. The IA points to Dr. Liu’s testimony about the “connections between bit lines and memory cells in the NOR architecture and the NAND architecture, including the necessity of select transistors in the NAND architecture” but not in the NOR architecture *Id.* (citing Liu, Tr., 349:19 – 350:12, 352:10-25, 354:7-16, 355:13-20, and 356:4-14).

### **iv. Analysis**

The Commission finds that the ID’s construction of “memory array” in the claim term “a dummy word line arranged at an edge of a memory array coupled to the memory cell,” is correct and does not specifically include or exclude select transistors. Thus, the Commission has determined to affirm the ID’s construction to mean “multiple memory cells coupled to a grid of word lines and bit lines.” ID at 80.

Macronix seeks to specifically exclude select transistors from the construction of “memory array.” The IA, on the other hand, argues that select transistors are necessarily present in the memory array architecture of NAND flash memories. In the IA’s view, the ID’s construction requires the memory cells to be coupled to the grid and bit lines, and the evidence

shows that the coupling must be done through select transistors. *See* IA Pet. at 8. The IA relies heavily on expert testimony that “in the NAND flash array architecture of the accused products, [[

Sub at 7 (citing Liu, Tr. 202:22-25 (Q. [[

]] A. [[

The evidence the IA points to shows that technical experts for both Macronix and Toshiba share that view. Dr. Liu testified that [[

]]. Liu Tr., 202:22-25, 207:4-7, 304:2-11; IA Pet at 11. Dr.

Baker, Toshiba’s technical expert testified that “[[

]].” RX-1245C (Baker

RWS), Q/A 59. Dr. Rhyne, Toshiba’s expert, agreed, testifying as follows:

Q. It’s your opinion as one of ordinary skill in the art of the ’602 patent that a memory array includes select transistors, correct?

A. It’s my opinion that it does and it has to.

Q. One of ordinary skill in the art of the ’602 patent understood that a memory array includes the memory cells, including dummy cells, word lines, including dummy word lines, bit lines, and select transistors, correct?

A. Yes sir, they would have to include the select transistors in that definition.

Rhyne, Tr. 1088:3-19, 1981:5-9.

But this testimony disregards the undisputed fact that the ’602 patent is not limited to a NAND architecture. Indeed, the patent expressly states that “[o]ne of ordinary skill in the art will recognize that memory cell **260<sub>jk</sub>**, and dummy cells **270<sub>j</sub>** and **275<sub>j</sub>** may be, for example, floating cells, SONOS . . . nonvolatile cells, etc.”). ’602 Patent, col.3 ll.60-64; *see also* Liu, Tr.,



349:19 – 350:12, 352:10-25, 354:7-16, 355:13-20, and 356:4-14; . Thus, while select transistors may be necessary for a NAND architecture, the claimed invention is not limited to NAND architectures and so expressly requiring select transistors would impermissibly exclude disclosed embodiments from the claim scope. *See Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013) (“We have held that ‘a claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct’”); *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996) (same).

Toshiba does not dispute this, stating that an ordinarily skilled artisan “would not understand the claim term ‘coupled to’ in the asserted claims of the ’602 patent, construed to mean ‘conductively connected,’ to by itself always require select transistors to practice the asserted claims in any potentially accused product or any alleged prior art.” Toshiba Sub. at 1. Toshiba’s position, is that because its accused NAND [[

]]” and thus “prevents the “coupled” claim limitation from being practiced in the accused products at the time of importation” *Id.* As discussed below, the Commission finds this argument unpersuasive.

**b. Whether the Claimed “Memory Array” Is Required to Span an Entire Plane Or Only a Subset of Memory Cells in a Plane**

**i. Complainants’ Submission**

According to Macronix, the ID’s conclusion that “a memory array, as construed, ‘could span an entire plane or only a subset of memory cells in a plane’ is fully consistent with its construction.” Macronix Sub. at 29. Macronix states that the ID “undertook the construction of ‘memory array’ to address Toshiba’s argument that this term is limited to a NAND plane,” and that “[t]he record and the ’602 patent—which does not mention a ‘plane,’ much less restrict the

‘memory array’ based on the concept of a ‘plane’—compelled the [ID’s] construction and conclusion.” *Id.*

Macronix explains that “[u]nder the ’602 patent’s express definition, which the [ID] adopted, any group of ‘multiple memory cells’ that are ‘coupled to a grid of word lines and bit lines’ constitutes a memory array.” *Id.* at 32 (citing JX-0002 at 1:15-17; ID at 80). Macronix states that “a plane consisting solely of multiple memory cells coupled to a grid of word lines and bit lines could be a memory array under the [ID’s] construction” and that “where a plane includes multiple groups of memory cells, the [ID’s] construction also permits each of these groups to constitute the claimed ‘memory array,’ as long as the cells in a given group are coupled to a grid of word lines and bit lines.” *Id.* (citing Tr. (Liu) at 298:10-19 (explaining that a plane could be a memory array if it consists entirely of memory cells coupled to a grid of word lines and bit lines); Tr. (Liu) at 197:20-198:15, 267:23-268:9). Macronix avers that “the breadth of the construction merely reflects the diverse ways of implementing a ‘memory array.’” *Id.*

Macronix further argues that “there is no basis for injecting a limitation based on the concept of a ‘plane’ into the term ‘memory array’ or the [ID’s] construction.” *Id.* Macronix points to Dr. Baker’s statement that “the ’602 patent ‘does not refer to a memory array as a whole plane,’ and in fact does not even mention the concept of a ‘plane.’” *Id.* (citing Tr. (Baker) at 790:7-13). According to Macronix, “that is not surprising, because ‘plane’ is a ‘term of art’ for NAND flash, whereas the ’602 patent describes and claims its invention in general terms which, in addition to covering NAND, also encompass many other types of memory architectures that do not have ‘planes.’” *Id.* at 33 (citing JX-0002 at 3:60-65; Tr. (Rhyne) at 1074:13-25; Tr. (Liu) at 266:3-12, 272:13-274:4; (Tr. (Baker) at 791:4-7).

## ii. Respondents' Submission

Toshiba asserts that “[t]he additional language ‘a memory array consistent with the ’602 patent . . . could span an entire plane or only a subset of memory cells in a plane’ is inconsistent with construing the ‘memory array’ as ‘multiple memory cells coupled to a grid of word lines and bit lines.’” Toshiba Sub. at 14. Toshiba explains that “because the ‘grid’ that comprises the memory array is coextensive with the plane, the grid could not ‘span . . . only a subset of memory cells in a plane.’” *Id.* According to Toshiba, “[[

]] *Id.* (citing RX-1245C at Q51-Q53; RX-1244C at Q119-Q120).

Toshiba states that “[[

]] *Id.* (citing RX-1244C at Q160; RX-1245C at Q79; RX-1016C; RX-1017C; Tr. at 184:3-7, 785:21-23, 786:22-787:2; RX-1245C at Q52-Q53, Q78-Q79; Tr. at 782:9-13; RX-1244C at Q119-Q121). Toshiba contends that “[[

]]

*Id.*

Toshiba further argues that “[a]ll of the components that collectively comprise the grid in the accused products [[

]]” *Id.* at 14-15 (citing RX 1245C at Q58-Q59; RX-1244C at Q162-Q166; RX-1261C; RDX-105.21C). Thus, according to Toshiba, “calling only a portion of the integrated grid structure a memory array does not make any sense, is arbitrary and would be contrary to the teaching of the ’602 patent.” *Id.* (citing RX-1245C at Q56-Q57; Tr. at 902:22-904:5, 916:8-917:8.).

### **iii. IA’s Submission**

The IA states that “this additional language is consistent with the ID’s construction of the claim term ‘memory array’ (*i.e.*, ‘multiple memory cells coupled to a grid of word lines and bit lines’).” IA Sub. at 23. The IA explains that “the specification contains a statement defining a memory array: ‘Multiple memory cells may form a memory array, which generally includes memory cells coupled to a grid of word lines and bit lines.’” *Id.* at 23-24. According to the IA, “[n]otably absent from this statement is any restriction with respect to the quantity of memory cells in the memory array” and also “absent from this statement is any restriction with respect to the quantity of word lines and bit lines or the grid of word lines and bit lines.” *Id.* at 24 (citing ID at 76-78 (quoting JX-0002 (’602 patent), 1:15-17)).

The IA notes that Toshiba “relies on extrinsic evidence, including technical documents and deposition testimony (from a fact witness, Mr. Nakamura, and an expert witness, Dr. Baker).” *Id.* In the IA’s view, the ID does not err in finding “this extrinsic evidence to be of limited value, especially when some of the extrinsic evidence is contradictory.” *Id.*

### **iv. Analysis**

The Commission finds that the ID’s statement that a memory array consistent with the ’602 patent “could span an entire plane or only a subset of memory cells in a plane” is not in error. ID at 80. The specification of the ’602 patent defines a memory array, stating that

“[m]ultiple memory cells may form a memory array, which generally includes memory cells coupled to a grid of word lines and bit lines.” ’602 patent, col.1 ll.15-17. The specification makes no mention of a plane, but only requires that a memory array include “memory cells coupled to a grid of word lines and bit lines.” *Id.* Consistent with this understanding, the ID states that a “‘memory array’ in the context of the ’602 patent shall be construed to mean multiple memory cells coupled to a grid of word lines and bit lines.” ID at 80.

The ID notes Toshiba’s argument that the claimed “memory array” requires the memory array to include the full extent of the word lines and bit lines in an accused product. ID at 77-78.

The ID further notes that in support, Toshiba “relies on Dr. Baker’s review of Toshiba’s technical documents and the testimony of Toshiba engineer Hiroshi Nakamura, who describes [[

]].” *Id.* at 78 (citing RX-1244C (Nakamura WS) at Q/A 126-138; RX-1245C (Baker RWS) at Q/A 54 (citing CX-2704C at MX104600017261; RX-0321C at MX104600052862; CX-2707C at MX104600017381; CX-2708C at MX104600017524)). The ID, however, finds that “[t]his extrinsic evidence is of limited value for claim construction” and that “[[

]].” *Id.* The ID further notes that “Macronix identifies some contradictory evidence in Toshiba’s documents and Mr.

Nakamura’s deposition testimony [[

]].” *Id.* (citing CX-3840C (Liu DWS) at Q/A 348 (citing RX-0036C at 17); JX-0025C (Nakamura Deposition) at 186-87). The ID concludes that “[t]he fact that certain engineers [[

]] is not compelling evidence for adopting this interpretation of the term “memory array” in the asserted ’602 patent claims.

The Commission finds that nothing in the patent’s intrinsic evidence compels limiting the claimed “memory array” to the entire grid of word lines and bit lines in a plane. Accordingly the Commission has determined to affirm the ID’s construction. The Commission has also determined to affirm the ALJ’s infringement findings regarding “memory array” for the reasons provided in the ID, to the extent that those findings are not inconsistent with this opinion.

## **2. Whether the Accused Toshiba Products Satisfy the “Coupled to” Limitation of the Asserted Claims**

### **i. The ID**

The ID finds that Macronix failed to prove that the accused Toshiba products directly infringe the asserted claims of the ’602 patent.<sup>9</sup> ID at 84. The ID observes that the claim limitation “coupled to” was construed to mean “conductively connected.” ID at 81 (citing Order No. 23 at 37-40). The ID notes Macronix’s argument, supported by the IA, that the accused products infringe this limitation because [[

]]. *Id.* Macronix’s expert, Dr. Liu, testified that in the  
accused products, [[

*Id.* (citing CX-3840C at Q/A 378). The ID, however, finds that “neither Dr. Liu nor any of the parties cites any support for interpreting this claim limitation to only require capability for conduction.” *Id.* The ID further finds that the “coupled to” limitation is not infringed when the select transistors are open. *Id.* at 82. The ID credits Toshiba’s argument that “because the

---

<sup>9</sup> As noted above, the ALJ found that Macronix established that Toshiba induces infringement of the asserted claims of the ’602 patent. ID at 84-87. The ALJ noted that a complainant may prove the direct infringement necessary for inducement with evidence that the accused product “necessarily infringes the patent in suit.” ID at 85 (citing *ACCO Brands, Inc. v. ABA Locks Mfr. Co.*, 501 F.3d 1307, 1313 (Fed. Cir. 2007)). The ALJ then stated that “[t]here is no dispute that the ‘coupled’ limitation is infringed when select transistors are turned on in the accused products, creating a conductive connection between the bit lines and the memory cells.” *Id.* (citing Tr. at 772:15-773:2 (Baker)).

accused products [[ ]], there is no infringement of the ‘coupled’ limitation under section 337” and that the “Commission has held that “infringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.” *Id.* (citing *Certain Electronic Devices with Image Processing Systems, Components Thereof and Associated Software*, Inv. No. 337-TA-724, Comm’n Op. at 14 (Dec. 2, 2011)).

The ID rejects Macronix’s argument that “it would be improper to require that accused products [[ ]], because an apparatus claim is infringed based on the structure of the accused product, not its operation.” *Id.* The IA similarly argued that “requiring the actual flow of electrons would not be consistent with the claim language of the ’602 patent.” *Id.* However, the ID finds that Dr. Baker, Toshiba’s expert, “is not importing a ‘powered on’ requirement into this limitation — the ‘coupled’ limitation does not require electricity to flow but in accordance with the *Markman* order, it does require a conductive connection.” *Id.* at 82-83.

According to the ID, “[t]his limitation would be infringed whether the power was on or off in the memory device described in the specification, where the bit line is directly connected to the memory cells” but that the “[ ]], and Dr. Liu recognized the differences between the NOR memory architecture depicted in the ’602 patent and the NAND memory architecture “[ ]].” *Id.* at 83 (citing ’602 patent, Fig. 2). As the ID explains, in a “NOR architecture, the bit line is conductively connected to the memory cell at all times, and these products would infringe the ‘coupled’ limitation regardless of whether power is supplied” but that “in the NAND architecture “[ ]]

]], a select transistor must be powered on to make a conductive connection.” *Id.* The ID finds that because the “bit line [[ ]] is not coupled to the memory cell when

powered off,” “Toshiba does not directly infringe this limitation with respect to the accused products as imported, because the products are powered off.” *Id.*

## **ii. Commission Review**

The Commission determined to review the ID’s finding. On review, the Commission has determined to reverse the ID’s finding that the accused Toshiba products do not satisfy the “coupled to” limitation. In particular, the ID erroneously transforms apparatus claims into method claims via claim construction. When this legal error is corrected, the undisputed record evidence shows that the claim term “coupled to” only requires a structure that provides an electrical path, which is satisfied by the structure of the accused products.

Claim 1 of the ’602 patent claims a semiconductor memory device that includes a memory cell; a dummy word line arranged at an edge of a memory array coupled to the memory cell; a control logic for supplying a positive bias to the dummy word line during an erase operation; and at least one bit line coupled to the memory cell. That is, the asserted claims are directed to an apparatus (*i.e.*, a semiconductor device) and not to a method. Yet the ID finds that “because the accused products are powered off at the time of importation, there is no infringement of the ‘coupled’ limitation under section 337.” ID at 82. The ID construed “coupled” to mean conductively connected (ID at 81 (citing Order No. 23 at 37-40)), and based on this construction, the ID apparently finds that infringement occurs only when the device is actively conducting power.

We disagree with the ID. We see no basis to find that the “coupled to” limitation is limited to devices that are shipped performing the functionality of actively conducting. We do not believe that the intrinsic evidence supports such a finding. The claim itself does not include language drawn to active performance and the specification does not limit the claims in this way.



For example, in discussing its Figure 2, the '602 patent states that “[b]it line 230j is arranged in a first direction and *is coupled* at one end to sense amplifier/column decoder circuit 210. Word line 240k, which *is coupled* to row decoder 220 at one end, is arranged approximately perpendicular to bit line 230j.” ’602 patent, 3:15-21 (emphasis added). In this passage, the patent does not refer to or even mention electron, voltage, or current flow or otherwise require the actual flow of electrons. Rather, the coupling appears to simply reference an ability for electrons to flow. This understanding is supported by extrinsic evidence. Expert testimony in the record shows that those of ordinary skill in the art reading the patent would understand that claim 1 is defined by the structural arrangement of a memory cell into a bit line and word line, and not by whether the bit line and word line are powered on. *See* CX-3840C at Q/A377-Q/A378; RX-1245C at Q/A52; Tr. (Baker) at 773:18-775:14. Accordingly, we reject the ID’s construction of “coupled” to the extent the ID understood it to require actively conducting power.

The ID, in effect, treats the apparatus claims as method claims. However, Federal Circuit precedents interpreting the text of section 271 draw a clear distinction between method and apparatus claims for purposes of infringement liability. *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 576 F.3d 1348, 1363-64 (Fed. Cir. 2009) (*en banc* in relevant part). Infringement of a method claim only occurs after all steps of the patented method have been performed. *Id.* In contrast, apparatus claims with functional limitations can be directly infringed by accused structure that has the capability to satisfy the limitation at issue without the need for any modification. *See Texas Adv. Optoelectronic Solutions, Inc. v. Renesas Electronics America, Inc.*, 895 F.3d 1304, 1327 (Fed. Cir. 2018); *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1333 (Fed. Cir. 2013) (“It is well settled that an accused device that sometimes, but not always, embodies a claim nonetheless infringes.”). As described above, we do not find that the '602

patent limits its apparatus claims to active performance and there is no requirement under section 271 that an accused device be in actual use to infringe an apparatus claim. This arises from the principle that “apparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb, Inc.*, 909 F.2d 1464, 1468 (Fed. Cir. 1990) (emphasis in original). Further, as Macronix notes, the Commission has found infringement in similar circumstances. *See Certain Inject Ink Supplies And Components Thereof*, Inv. No. 337-TA-691, Comm’n Op. at 15-18 (Nov. 1, 2011) (Commission found infringement of claims requiring various parts to be “electrically coupled” to other parts or devices even though the accused ink cartridges were not powered on at the time of importation).

The ID states that “[t]his limitation would be infringed whether the power was on or off in the memory device described in the specification [of the ’602 patent], where the bit line is directly connected to the memory cells” but that the “[

]].” ID at 83 (citing ’602 patent, Fig. 2). The ID adds that in a “NOR architecture [of the 602 specification], the bit line is conductively connected to the memory cell at all times, and these products would infringe the ‘coupled’ limitation regardless of whether power is supplied” but that “in the NAND architecture [[ ], a select transistor must be powered on to make a conductive connection.” *Id.* The ID appears to be comparing the accused products to an embodiment disclosed in the patent to analyze infringement. This is improper. The Federal Circuit has made clear that “[i]nfringement, literal or by equivalence, is determined by comparing an accused product not with a preferred embodiment described in the specification ... but with properly and previously construed claims in suit.” *SRI Int’l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc).

The undisputed record evidence shows that the accused Toshiba products satisfy the “coupled to” limitation. Dr. Baker, Toshiba’s expert testified that the limitation as construed “means that there can be an electrical path between the bit line and the memory cell with some components” Tr. (Baker) at 773:18-773:25; 774:1-21. Dr. Liu, Macronix’s expert agreed that the [[

]].” CX-3840C at Q/A376. The ID, however, discounted this testimony because it imposed an erroneous requirement that the memory cells must be powered on at the time of importation for infringement. *See* ID at 84 (“The bit line [[ ]] is not coupled to the memory cell when powered off, and therefore Toshiba does not directly infringe this limitation with respect to the accused products as imported, because [[

]].”). Accordingly, based on the record evidence, the Commission has determined to reverse the ID’s non-infringement finding, and holds that Macronix has established that the accused Toshiba memory devices satisfy the “coupled to” claim limitation as properly construed.<sup>10</sup>

**B. Whether Macronix Established the Economic Prong of the Domestic Industry Requirement**

Macronix attempted to satisfy the economic prong of the domestic industry requirement as to all asserted patents in two distinct ways: (1) based on an industry in the process of being established via investments related to a semiconductor wafer referred to as the [[

]]; and (2) based on investments in “customer facing” engineering at its California subsidiary, MXA. ID at 142 (citing CIB at 166-94). The ALJ rejected both theories. The Commission determined to review the ID’s finding that Macronix failed to establish a domestic

---

<sup>10</sup> The Commission adopts the ID’s finding that the accused products satisfy each limitation of claim 6 of the ’602 patent. ID at 87-88.

industry in the process of being developed based upon a petition for review by the IA and Macronix.

### **1. Applicable Law on Domestic Industry**

Section 337 declares unlawful the importation, the sale for importation, or the sale in the United States after importation of articles that infringe a valid and enforceable U.S. patent. 19 U.S.C. § 1337(a)(1)(B). Section 337 further requires the presence of a domestic industry relating to the articles protected by the patent. 19 U.S.C. § 1337(a)(2). In a patent-based investigation, the complainant must show that an industry in the United States “relating to the articles protected by the patent . . . exists or is in the process of being established.” *Id.* The statute defines a domestic industry as follows:

(3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned –

(A) significant investment in plant and equipment;

(B) significant employment of labor or capital; or

(C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3).

The domestic industry requirement consists of an economic prong and a technical prong. *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). Satisfaction of the economic prong requires that there be a sufficient level of employment or investment in certain activities that meets the criteria of any one of the three factors listed above. *See, e.g., Lelo Inc. v. Int’l Trade Comm’n*, 786 F.3d 879 (Fed. Cir. 2015). Economic prong of the domestic industry requirement cannot be met based solely on qualitative factors. *Id.* Satisfaction of the technical

prong requires that the specified economic investments and activities must relate to articles that are “protected by the patent” under section 337(a)(3).

The Commission has held that a domestic industry is in the process of being established when (1) a patent owner takes “the necessary tangible steps to establish such an industry in the United States,” and (2) there is a “significant likelihood that the industry requirement will be satisfied in the future.” *See Certain Stringed Musical Instruments & Components Thereof*, Inv. No. 337-TA-586, Comm’n Op. at 13, 2008 WL 2139143, at \*7 (U.S.I.T.C. May 16, 2008). The Commission’s analysis of this statutory emerging domestic industry provision in *Stringed Musical Instruments* quotes the 1988 legislative history, and states:

As for the legislative history of section 337(a)(2), an industry would be considered “in the process of being established” if the patent owner “can demonstrate that he is taking the necessary tangible steps to establish such an industry in the United States.” S. Rep. 100-71 at 130. “The owner of the intellectual property right must be actively engaged in steps leading to the exploitation of the intellectual property, including application engineering, design work, or other such activities. The Commission should determine whether the steps being taken indicate a significant likelihood that the industry requirement will be satisfied in the future.” H. Rep. 100-40 at 157. Moreover, “the mere ownership of a patent or other form of intellectual property rights would not be sufficient to satisfy this test.” S. Rep. 100-71 at 129.

*Stringed Musical Instruments*, Comm’n Op., 2008 WL 2139143, at \*10. This standard is consistent with the Federal Circuit’s ruling that only a complainant that is “actively engaged in steps leading to the exploitation of the intellectual property” should have access to the Commission. *See John Mezzalingua Assocs., Inc. v. Int’l Trade Comm’n*, 660 F.3d 1322, 1328 (Fed. Cir. 2011) (quoting H.R. Rep. No. 100-40, at 157 (1987)).

## 2. Whether Macronix Has Proven a Domestic Industry in the Process of Being Established

### i. The ID

Macronix presented its [[ ]] in support of its claim that it has a domestic industry in the process of being established. As the ID observes, the [[ ]] was developed in connection with a joint venture contract between Macronix and [[ ]]" and that regarding "investments in [[ ]] research, development, and manufacture, Macronix points to [[ ]] in plant and equipment expenditures, including [[ ]]."

[[ ]] ID at 142-43 (citing CX-0435C). The ID further observes that "Macronix alleges a total of [[ ]] in expenditures for labor and capital investments by Macronix and its joint venture partner [[ ]] during the same time period" and that Macronix maintains that "the sum of these amounts, [[ ]], qualifies as research, development, and engineering." *Id.* at 143. Macronix contended that "the nexus requirement of subsection (C) can be presumed because 'the research investment is in an article embodying the asserted claims.'" *Id.* (citing RIB at 184-86).

The ID notes that work on [[ ]] and that "tape-out" (*i.e.*, manufacturing) of the [[ ]] was filed. *Id.* (citing Tr. at 633:18-20 (Bakewell); 647:25-648:5 (Bakewell)). The ID states that "Macronix does not dispute that the [[ ]] is not a commercial product" and that "Macronix's theory is that 'mass production and commercialization are not requirements of the domestic industry requirement generally, of the economic prong specifically, or of proof regarding an industry 'in the process of being established.'" *Id.* at 144 (citing CIB at 170-171). Macronix argued that "as long as 'the patented article' physically exists on or near the date the complaint is filed, there is a domestic industry in process" and that if mass production is required, "Macronix

relies on [[ ]].” *Id.* (citing Tr. at 651:9-652:11 (Bakewell); at 654:1-7).

The ID reasons that the “word ‘article’ in section (a)(2) is the same word that is used repeatedly in the statute to refer to an article of commerce, *i.e.*, a product for sale in the marketplace.” ID at 146 (citing 19 U.S.C. § 1337 (a)(1) (A), (B), (C), (E), (2), (3), (d)(1) (exclusion of articles from entry), (2) (exclusion of articles from entry), (e)(1) (exclusion of articles from entry), (f) (cease and desist from the production of like or directly competitive articles), (g)(2) (civil penalty for importation of articles), (h)(1) (forfeiture of any article) (3) (articles entitled to entry), (4)(A) (any article that is denied entry), (j)(3) (articles directed to be excluded from entry), and (1) (any article imported)). *Id.* The ID points to Supreme Court precedent that “identical words used in different parts of the same act are intended to have the same meaning.” *Id.* (citing *ClearCorrect LLC v. Int’l Trade Comm’n*, 810 F.3d 1283, 1294 (Fed. Cir. 2015) (quoting *Sullivan v. Stroop*, 496 U.S. 478 (1990))).

The ID notes that the Federal Circuit has construed the term “articles protected by the patent” to mean “products that are covered by the patent.” *Id.* at 146-47 (citing *InterDigital Commc’ns., LLC v. Int’l Trade Comm’n*, 707 F.3d 1295, 1298 (Fed. Cir. 2013)). In the ID’s view, “‘Articles’ as used in section 337 are ‘goods’ that are produced; articles are ‘products’ that can be licensed.” *Id.* at 147 (citing *ClearCorrect*, 810 F.3d at 1292 (“the word ‘article’ as ordinarily used in tariff acts embraces commodities generally, whether manufactured wholly or in part or not at all . . .”) (quoting *Articles*, Dictionary of Tariff Information (1924))). Thus, the ID concludes that “the whole purpose of section 337 is to prevent importation of articles of commerce that compete unfairly in the American marketplace and to stop such articles from

being sold, if they are here” and that “[a]s a trade statute, the purpose of Section 337 is to regulate international commerce.” *Id.*

The ID states that “Section 337 is an enforcement statute enacted by Congress to stop at the border the entry of goods, *i.e.*, articles that are involved in unfair trade practices.” *Id.* (citing *InterDigital*, 707 F.3d at 1295 (holding requirement to demonstrate exploitation of intellectual property “with respect to the articles protected by the patent” satisfied “because the patents in suit protect the technology that is . . . found in the products that [InterDigital] has licensed and that it is attempting to exclude”). The ID finds that “[c]onsistent with the provisions and purpose of section 337, the word ‘articles’ in section (a)(2) means products or other commodities that are sold in the marketplace” and that “Section (a)(2) protects a complainant who has a product to be sold in the marketplace but does not yet have the resources to sell it.” ID at 147. Such a complainant, according to the ID, “will be protected as long as there is tangible evidence that the product will be sold in the marketplace within a reasonable time.” *Id.* (citing *Stringed Instruments*).

The ID concludes that “Section 337(a)(2), properly construed, thus provides protection in a fairly limited set of circumstances and does not, as Macronix suggests, create a loophole in the domestic industry requirement by permitting a company to establish a domestic industry based only on research expenditures, without relating those expenditures to an actual article of commerce.” *Id.* at 148. The ID reasons that “Section 337 (a)(2) cannot be read to protect research that is not embodied in an article of commerce” and found that “[o]n the facts in the record, the [[ ]] cannot be considered a prototype of an article of commerce” and that “it is at most a precursor of what may someday be a prototype or an actual article.” *Id.* at 148 n.30. Specifically, the ID finds that “the [[ ]] is not a product that is ready for



the marketplace and is not likely ever to be sold as a commercial product” and that the “[[ ]] research project, which has been in process since [[ ]] before it results in a product for sale, if it ever does.” *Id.* The ID acknowledges that undisputedly “the [[ ]]” but that “[t]here is no evidence in the record that any of these [[ ]] has been sold.” *Id.* Instead, the “evidence shows, on the contrary, that these [[ ]] were used to conduct further research.” *Id.*

## **ii. Commission Review**

The Commission determined to review the finding that Macronix failed to satisfy the domestic industry requirement and posed the following question to the parties:

Please discuss the showing necessary to meet the statutory requirement of “articles protected by the patent” for a domestic industry in the process of being established under section 337(a)(2).

### **a) IA’s Submission**

The IA notes that under Section 337(a)(2) and Commission precedent, a complainant seeking to show “an industry in the United States, relating to the articles protected by the patent . . . is in the process of being established” must demonstrate (i) that it is taking “the necessary tangible steps to establish such an industry”; and (ii) there is a “significant likelihood that the industry requirement will be satisfied in the future.” IA Sub. at 25 (citing 19 U.S.C. § 1337(a)(2); *Stringed Musical Instruments*, Comm’n Op. at 13). According to the IA, a complainant “can meet that statutory requirement by showing, for example, that an industry in the United States relating to ‘material things’ that ‘are covered by the patent’ (*i.e.*, technical prong) is in the process of being established. *Id.* (citing *ClearCorrect*, 810 F.3d at 1299

(construing “articles” to mean “material things”); *InterDigital*, 707 F.3d at 1298 (construing “articles protected by the patent” to mean “products that are covered by the patent”)).

The IA asserts that “[c]ontrary to Federal Circuit and Commission precedent, the ID required a higher showing to meet the statutory requirement of ‘articles protected by the patent’ when the ID determined,” among other things “(i) that the word ‘article’ [sic] in Section 337(a)(2) is ‘the same word that is used repeatedly in the statute to refer an article of commerce, *i.e.*, a product for sale in the marketplace,’ and (ii) that the word ‘articles’ in Section 337(a)(2) means ‘products or other commodities that are sold in the marketplace.’” *Id.* (citing ID at 146-147).

According to the IA, “[t]he ID’s proposed requirement of “a product for sale in the marketplace” and, as a result, restriction against finding any domestic industry in the process of being established based on research and development expenditures (or engineering expenditures) that are not embodied in “a product for sale in the marketplace” is in conflict with Commission precedent.” *Id.* at 26. The IA points to *Certain Computers and Computer Peripheral Devices, and Components Thereof, and Products Containing Same* (“*Computers*”), Inv. No. 337-TA-841, and argues that there, the Commission specifically considered “whether establishing a domestic industry under 19 U.S.C. § 1337(a)(3)(C) requires proof of ‘articles protected by the patent’ (*i.e.*, a technical prong).” *Id.* (citing *Computers*, Inv. No. 337-TA-841, Comm’n Op. at 5 (Jan. 9, 2014) (quoting 19 U.S.C. § 1337(a)(3)(C)); *see also* 19 U.S.C. § 1337(a)(2) (reciting “articles protected by the patent”). The IA observes that “[a]fter requesting and receiving briefing from the parties on the statutory language, legislative history, Commission decisions, and Federal Circuit decisions relevant to that question, the Commission answered the question in the affirmative.” *Id.*

The IA explains that “in answering the question, the Commission considered but rejected the premise that the article protected by the patent ‘must be a product that came to market, or is

expected to come to market, under the protective umbrella of the asserted patent that the product commercializes.” *Id.* The IA asserts that the Commission considered “the plain meaning of the statute and its legislative history” and determined that neither one provides support for adopting that premise, which “would offer no relief to an inventor-complainant in certain circumstances, such as when an industry copies her invention -- maybe verbatim from the published patent -- before the complainant has had an opportunity to engage in production-oriented efforts of her own.” *Id.* at 26-27. The IA states that “in view of the Commission’s determination that ‘articles protected by the patent’ are not restricted to products that come to market, OUII respectfully submits that the ID’s finding that ‘articles protected by the patent’ must be embodied in ‘products for sale in the marketplace’ and, thus, the ID’s determination of no domestic industry in the process of being established, should be reversed.” *Id.* at 27.

**b) Toshiba’s Submission**

Toshiba contends that “[t]here is no dispute in this Investigation as to the proper test for determining whether an industry is ‘in the process of being established’ for purposes of Section 337(a)(2)” and that all the parties are in agreement as to the Commission’s two part test. Toshiba Sub. at 18 (citing *Stringed Instruments*, 2008 WL 2139143, at \*8; *Certain Video Game Systems & Controllers*, Inv. No. 337-TA-743, Comm’n Op. 2011 WL 1523774 (April 14, 2011)).

According to Toshiba, “Macronix alleges that as of the date of the complaint, a domestic industry related to an experimental PCM non-volatile memory technology was in the process of being established” and that to “prove that the future PCM industry is related to articles protected by the patent, Macronix relies on fabrication of the so-called [[ ]] during the ongoing [[ ]] research conducted by Macronix and [[ ]].” *Id.* Toshiba contends that “the ID correctly concluded that the overwhelming evidence establishes that Macronix (a) failed to prove

it undertook the required necessary tangible steps to establish a PCM industry in the United States, and (b) failed to establish a ‘significant likelihood’ that a PCM industry related to articles protected by the patent will be satisfied in the future.” *Id.* at 18-19 (citing ID at 153). Toshiba argues that “[i]n the context of a domestic industry in the process of being established, it is not sufficient merely to establish that a product (or prototype) practices the asserted patents and satisfies the technical prong” but that “satisfaction of the two-part test articulated is still required.” *Id.* at 19 (citing *Video Game Systems*, Inv. No. 337-TA-743).

Toshiba relies on *Video Game Systems*, and contends that there, the Commission remanded an Initial Determination finding no economic prong to the ALJ to address four questions relevant to whether or not a domestic industry exists or is in the process of being established. *Video Game Systems*, Inv. No. 337-TA-743, ID, 2011 WL 6210524 at \*79 (Nov. 2, 2011). According to Toshiba, “[o]n remand, the ID found that Complainant Motiva’s prototype device that was created prior to filing its complaint practiced the asserted patents and therefore satisfied the technical prong of the domestic industry requirement” but that “[n]otwithstanding this technical prong finding, the ALJ addressed the Commission’s specific questions, which included in relevant part:

- “How close was Motiva’s technology to being commercialized and/or production ready?” (*Id.* at \*85);
- “Was Motiva taking the ‘necessary tangible steps to establish’ a domestic industry? See *Stringed Instruments*, at 13 (quoting S. Rep. 100-71 at 130).” (*Id.* at \*86); and
- “Do the steps ‘taken [by Motiva] indicate a significant likelihood that the industry requirement will be satisfied in the future?’ See *Stringed Instruments*, at 13 (quoting H. Rep. 100-40 at 157).” (*Id.* at \*88).

Toshiba argues that in *Video Game Systems*, the “ID considered Motiva’s evidence that

‘its fully-functional prototype was ‘ready for commercialization’” and was being shown to actual customers, but ultimately the ID found that Motiva’s technology was “not close to being incorporated into a commercial or production-ready product.” *Id.* at 19 (citing *Video Game Systems* at \*85). Toshiba states that “even though the ID separately found that the prototype practiced the asserted patents and satisfied the technical prong,” it followed the Commission’s instructions and determined that “Motiva has failed to demonstrate that a domestic industry ‘is in the process of being established,’ pursuant to Section 337(a)(2).” *Id.* (citing *Video Game Systems* at \*95; *Motiva, LLC v. International Trade Commission*, 716 F.3d 596, 601 (Fed. Cir. 2013) (noting “Motiva’s only remaining prototype was a product far from completion, and a multitude of development and testing steps remained prior to finalizing a product for production.”)).

Toshiba states that “the ID’s determination that the [[ ]] is not an ‘article’ within the meaning of Section 337(a)(2) should be viewed in light of the entire statutory framework” and that “a key consideration in the ID’s analysis is the lack of evidence linking the patent-practicing aspects of the [[ ]] chip that Macronix alleges will establish a future domestic industry.” *Id.* at 21-22. Toshiba argues that “[t]he lack of any genuine commercial prospects for what the evidence showed was merely an [[ ]] research tool whose purpose was to conduct further research obviously undermines any claim that a future PCM industry would ever materialize (let alone within a reasonable time)” and that “the significant technological obstacles confronting [[ ]] when measured at the time of the [[ ]] fabrication makes it impossible to conclude that at the time the complaint was filed (*i.e.*, before the first [[ ]]) there was a ‘significant likelihood’ that a domestic industry would be established

in the future. *Id.*

Thus, Toshiba contends that “the ID applied the proper two-part test for evaluating an industry ‘in the process of being established’ and considered substantial documentary evidence and fact and expert testimony before concluding that Macronix had failed to establish such an industry with respect to the [[ ]].” *Id.* Toshiba asserts that “the evidence confirms [that] Macronix failed to prove the necessary tangible steps to establish an industry in the United States, or a ‘significant likelihood’ that the industry requirement will be satisfied in the future.” *Id.* at 22-25.

c)        **Macronix’s Submission**

Macronix observes that “Toshiba only cites ALJ Rogers’ remand determination in [*Video Game Systems*] to suggest that an emerging industry requires a commercial product.” Macronix Reply Sub. at 21. But according to Macronix, “*Video Game Systems* never addressed what an ‘article’ means in Section 337, nor did it hold that the lack of a commercial product precludes a finding of DI in the process of being established.” *Id.* As Macronix explains, “the complainant in *Video Game Systems* had, by the time of its complaint, ***ceased all investment*** under subsection (C) relating to the asserted patents.” *Id.* (citing *Video Game Systems* at \*92-95; *see also Motiva*, 716 F.3d at 598-601. Specifically, Macronix notes that “Complainant Motiva ceased its investments in the development of its patented article about ***3.5 years before filing its complaint*** (*Id.* at \*89)” and “[t]hus, the ***only investments*** on which Motiva could rely were litigation expenses.” *Id.* (emphasis supplied by Macronix). Macronix further explains that “Motiva proposed that its litigation campaign would encourage commercial manufacturers to license Motiva’s technology, such that an emerging industry existed in the promise of future licensing (*Id.* at \*92-95) and that “[i]t was within this context that ALJ Rogers discussed Motiva’s efforts

to encourage adoption of its technology via litigation, and concluded that the complainant's speculative future licensing program could not satisfy the emerging DI test.” *Id.* (citing *Video Game System* at \*94-95; *Motiva*, 716 F.3d at 598-601). Macronix argues that “*Video Game Systems* focused on Motiva’s lack of timely investments and lack of commercial licensing interest in its technology, a fact which was only relevant because Motiva’s DI contention depended on increased marketplace licensing.” *Id.* Macronix states that “*Video Game Systems* in no way reinterpreted Section 337 to require commercialization or an article “sold in the marketplace.””

Macronix further argues that in contrast to *Video Game Systems*, it is not relying on litigation expenditures or licensing campaigns, but has instead made significant investments and efforts in the U.S. to develop a new technology embodied in an article manufactured in this country: [[ ]]. *Id.* Macronix adds that “[t]hese investments, together with [[ ]] on the technical development, design, and manufacture of the innovative [[ ]]” and that “[t]hese investments in labor and capital, plant and equipment, and/or exploitation of the asserted patents through R&D and engineering, occurred in [[ ]], and are part of a long partnership between [[ ]] to create the next technological revolution in NVM.” *Id.* Thus, Macronix argues that *Video Game Systems* has no bearing on this investigation.

### iii. Analysis

The Commission finds that the ID’s misinterpretation of the statute to require “an article of commerce, *i.e.*, a product for sale in the marketplace” (ID at 146) led to the erroneous

conclusion that Macronix failed to show a domestic industry in the process of being established. Thus, the Commission has determined to reverse the ID.

In the present investigation, Macronix relies on investments under prongs (A), (B), and (C). No dispute exists that Macronix and [[ ]]] have “devoted significant resources—[[ ]]], a large research team, and dedicated New York and Vermont facilities—to researching and developing PCM technology in the United States.” ID at 142-143; CDX-2506C (detailing the history of the Macronix [[ ]]); CX-3842C (Lung DWS) at Q/A8-Q/A9; CX-2176C (Macronix[[ ]] License)).

The undisputed evidence shows that the [[ ]]] has invested over “[[ ]]] in domestic plant and equipment, domestic employment of labor and capital, and domestic exploitation of the Asserted Patents, all of which occurred in connection with the design and manufacture of the [[ ]]].” ID at 142-144; CX-3837C at Q/A23-Q/A64; CX-3841C (Yang DWS) at Q/A60-Q/A66; CX-3842C at Q/A17; Tr. (Lung) at 129:16-136:1; JX-0010C at 28:1-30:10, 42:2-44:1; Tr. (Bakewell) at 632:1-640:19, 650:20-652:11). There is also no dispute that hundreds of the [[ ]]] have been manufactured by the [[ ]]] in Vermont and New York. ID at 144 (“[[ ]]] occurred six weeks after the complaint was filed.”); CX-3842C (Lung DWS) at Q/A2- Q/A4, Q/A10-Q/A20; JX-0010C at 32:12-19, 33:19-35:14; CX-3837C (Bakewell DWS) at Q/A61, Q/A147-Q/A150; Tr. (Lung) at 129:16-136:1 (confirming all [[ ]]] work occurs in the U.S.); Tr. (Bakewell) at 648:20-22); *see also* CX-3842C at Q/A 18).

Despite this significant domestic investment in the [[ ]]], the article protected by the asserted patents, the ID finds that Macronix failed to establish the



economic prong of the domestic industry requirement. The ID reaches that conclusion because, “the [[ ]] is not a product that is ready for the marketplace and is not likely ever to be sold as a commercial product.” ID at 148. We disagree with the ID’s interpretation of “articles” under section 337(a)(2). We are not aware of any authority that would compel the Commission to find that “articles” is limited to commercial goods. Indeed, neither the statutory text nor the legislative history of this provision mandates the ID’s conclusion that Section 337(a)(2) requires industries in the process of being established to prove commercial production. Section 337(a)(2) only requires that there is an industry in the United States “relating to articles protected by the patent” that is “in the process of being established.” Moreover, that emergent industry must prove that it has significant or substantial investments or employment in the United States “with respect to articles protected by the patent” as recited in the statute. *See* 19 U.S.C. § 1337(a)(2); 1337(a)(3)(A)-(C).<sup>11</sup> The statutory language of section 337(a)(2) on its face does not require commercial production for a domestic industry in the process of being established. The term “article” on its own is sufficiently capacious to embrace pre-commercial or non-commercial items. And the fact that section 337 allows a complainant to establish a domestic industry based on an industry “in the process of being established” strongly suggests that Congress did not envision commercialization as a prerequisite.

The Commission has previously considered and rejected the notion that the “article protected by the patent” “must be a product that came to market, or is expected to come to market, under the protective umbrella of the asserted patent that the product commercializes.”

---

<sup>11</sup> Subprong (C) requires “substantial” domestic investments in the exploitation of the patent, which must be supported by a demonstration of “nexus” between the investments and the patent right. 19 U.S.C. § 1337(a)(3)(C); *Certain Integrated Circuit Chips*, Inv. No. 337-TA-859, Comm’n Op., 2014 WL 12796437, at \*21 (Aug. 22, 2014). Here, the nexus requirement of subsection (C) can be presumed because the research investment is in the article protected by the patent. *See id.*

*Computers*, Inv. No. 337-TA-841, Comm'n Op. at 37. In *Computers*, the Commission, relying on the plain meaning of the statute and its legislative history, determined that neither provides support for adopting that understanding, which "would offer no relief to an inventor-complainant in certain circumstances, such as when an industry copies her invention -- maybe verbatim from the published patent -- before the complainant has had an opportunity to engage in production-oriented efforts of her own." *Computers*, Comm'n Op. at 39.

Consideration of the legislative history does not show any intent to limit articles to commercial goods. For example, when Congress amended section 337 in 1988 to add section 337(a)(3)(C), it made clear its intent was to enable certain specific categories of IP rights holders to pursue claims under the statute. These entities included universities and inventors who engage in licensing activities with manufacturers. *See* S. Rep. No. 100-71, at 129 (1987); H. R. Rep. No. 100-40, at 157 (1987). Licensing activities are often crucial for inventors, start-ups, and other businesses to raise the funds needed to develop a product that practices the invention and bring that product to market. During this development time, which can vary depending on the technology and other circumstances, those entities would not be able to satisfy the domestic industry requirement under a statutory construction that mandates a commercialization requirement. The effect of this construction would be to advantage speedy infringers at the expense of entities such as inventors, small businesses, and start-ups. This view is reflected in statements made by Senator Lautenberg in support of the 1988 amendments to the domestic industry requirement:

The so-called industry requirement is also too broad. Today, in order to get relief, inventors must exploit their invention by production in the United States. For better or worse, we are more and more an information based economy, for those who make substantial investments in research, there should be a remedy. For those who make substantial investments in the creation of

intellectual property and then license creations, there should be a remedy.

Let me give one example. There is a startup biotech firm in my state. Its product is its patents. It hasn't reached the stage to manufacture. It doesn't have the money. But it will reach that point, by licensing its patents to others. Should we deny that firm the right to exclude the works of pirates? Our legislation would say no. A party could get relief if it has made significant investment in R&D, engineering or licensing.

133 Cong. Rec. S. 1794 (Feb. 4, 1987).

Toshiba attempts to gloss over the ID's requirement of commercial production by arguing that the ID's finding is based upon Macronix's failure to satisfy the two prong test for an industry in the process of being established. To be sure, the ID purports to apply the two part test, *i.e.*, considers whether Macronix has taken "the necessary tangible steps to establish an industry in the United States" and whether there is a "significant likelihood that the industry requirement will be satisfied in the future." *See Stringed Instruments*, Inv. No. 337-TA-586, Comm'n Op. at 13, 2008 WL 2139143, at \*7). But underpinning the ID's application of the two prong test is the erroneous requirement of commercial production. In particular, the ID found that "[t]he evidence shows that the [[ ] is not a product that is *ready for the marketplace* and is not likely ever to be sold as a *commercial product*" and that "[[ ] research project, which has been in process since [[ ] before it results in a *product for sale*, if it ever does." ID at 150 (emphasis added).

Having rejected the ID's interpretation that the statutory term "article" requires commercial production, we find the record evidence supports Macronix's claim of an industry in the process of being established. The undisputed evidence shows that Macronix has substantial investments in research, development, and engineering of the article [[ ]

]] protected by the asserted patents. Macronix amply demonstrated its activities and investments of at least[[ ]]] toward the establishment of a PCM manufacturing industry in the United States, including the detailed tangible steps it has already taken and its further planned work to be undertaken in order to bring this industry to fruition within the foreseeable future. *See, e.g.*, CX-3837C at A23-A64; CX-3841C (Yang DWS) at A60-A66; CX-3842C at A17; Tr. (Lung) at 129:16-136:1; JX-0010C at 28:1-30:10, 42:2-44:1; Tr. (Bakewell) at 632:1-640:19, 650:20-652:11; . Simply because Macronix has not yet arrived at the final stages of commercializing the [[ ]]] does not mean that Macronix does not have a domestic industry in the process of being established with respect to [[ ]]] protected by the asserted patents.

Based on the foregoing reasons, the Commission has determined to reverse the ID's findings. The Commission therefore finds that Macronix has established a domestic industry in the process of being established relating to the [[ ]]] protected by the asserted patents under Section 337(a)(2).<sup>12</sup>

The Commission has determined to affirm the ID's determination that Macronix failed to establish a domestic industry based on investments in "customer facing" engineering for the reasons provided in the ID. See ID at 154-186.

---

<sup>12</sup> The Commission notes that Macronix previously asserted a domestic industry that "exists" in [[ ]]], but this contention was precluded pursuant to Order No. 26 (Jan. 8, 2018). ID at 142 n.24. The Commission thus addresses the issue of domestic industry in this investigation under the theory of whether it is "in the process of being established" since that is the theory advanced by Macronix that the ID considers. In so doing, we do not intend to imply that the investments present here are not substantial or could not be used to show the actual existence of a domestic industry under section 337(a)(3).